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Harnessing and blending the power of two research networks to improve prevention science and public health practice

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Abstract

Strategic collaborations are essential in moving public health research and practice forward¹, particularly in light of escalating fiscal and environmental challenges facing the public health community. This commentary provides background and context for an emerging partnership between two national networks, Prevention Research Centers (PRCs) and Public Health Practice-Based Research Networks (PBRNs), to impact public health practice. Supported by CDC, PRCs are celebrating over 25 years of transdisciplinary applied prevention research grounded in community and stakeholder engagement. Public Health PBRNs, funded by the Robert Wood Johnson Foundation, conduct innovative public health services and systems research with public health agencies and community partners to improve public health decision-making. By utilizing each of the networks' respective strengths and resources, collaborative ventures between PRCs and Public Health PBRNs can enhance the translation of applied prevention research to evidence-based practice and empirically investigate novel public health practices developed in the field.

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Conflict of interest statement

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Three current PRC-Public Health PBRNs projects are highlighted and future research directions are discussed. Improving the interconnectedness of prevention research and public health practice is essential to improve the health of the Nation.

Background

A recent special issue of the *American Journal of Preventive Medicine* focused on a renewed national research agenda for the field of public health services and systems research (PHSSR).² In that issue, Scutchfield and colleagues concluded that directed funding, new types of researchers, and longitudinal data are essential to move research focused on the organization, financing, and delivery of public health services forward.³ The current commentary suggests an addition to this list of needs: strategic partnerships that link applied prevention research, public health practice, and PHSSR. Specifically, a partnership between the national network of Prevention Research Centers (PRCs), the largest extramurally-funded program of the CDC⁴ and Public Health Practice-Based Research Networks (PBRNs), one of the driving forces behind national, state, and local PHSSR.^{5, 6} A partnership between these two networks could further enhance the bidirectional translation of prevention research to public health practice. Linkages between PRCs and Public Health PBRNs, as guided by the PHSSR agenda, would clearly help address the lack of progress in disseminating and implementing research-tested interventions and programs within the public health practice environment.^{7, 8} Similarly, such a linkage would contribute to the evaluation of practices and policies implemented in real-world public health settings that have not been previously researched for effectiveness, efficiency, equity, population impact, or cost.^{6, 9-11} This linkage may allow for an ultimate synergy between applied research and practice. The need for this synergy was best summarized by Larkin and Marks,¹² “Research unapplied is sterile and hence an unwarranted use of funds and intellect; and just as surely public health practice ungrounded in science is equally fruitless, yielding little health value. Research and practice succeed only when they connect closely with each other” (p. S79).

In the current fiscal environment, where spending for governmental public health activities is declining, medical costs are increasing, and the nation is slowly recovering from the largest economic recession since the Great Depression,¹³ the public health community is faced with significant challenges. For example, public health has been greatly challenged by job losses, federal and state funding cuts, and managed care, as well as increased rates of preventable chronic disease, health disparities, and emerging health threats such as H1N1 influenza and natural disasters. Simultaneously, the public health practice community is trying to establish its role in federal healthcare reform, prepare for accreditation and quality improvement planning, and apply underutilized evidence-based public health (EBPH) practices such as those outlined in *The Guide to Community Preventive Services*¹⁴ or *Cochrane Reviews*.¹⁵ As advocated by the IOM⁹, these activities cannot and should not be performed by an individual public health agency or in isolation. Scutchfield and Mays¹⁶ suggested that coordinated, well-defined partnerships are pivotal to improving public health system performance. Public health-related partnerships may involve local and state health departments, government, academia, education systems, community organizations, private businesses, healthcare delivery agencies, and/or health associations. Partnerships can vary in

nature depending on partners' capacity, available resources, incentive to participate, purpose, and function. Specifically, partnerships focusing on information exchange, planning and policy development, *and* implementation of programs and policies are more likely to directly influence public health outcomes than partnerships that focus on any of these aspects in isolation.¹⁶ We propose forming this type of strategic partnership between PRCs and Public Health PBRNs as guided by PHSSR. In this commentary, we describe how this proposed linkage may best be made and why the effort should be a priority.

National prevention research and public health practice networks

PRCs were established by Congress in 1984 to “undertake research and demonstration projects in health promotion, disease prevention, and improved methods of appraising health hazards and risk factors...and serve as demonstration sites for the use of new and innovative research in public health techniques to prevent chronic diseases.”¹⁷ The PRC Program is administratively located in the CDC’s National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. Funded PRCs are located in schools of public health and schools of medicine or osteopathy that have an accredited residency program in preventive medicine and are comprised of academic researchers, community members, and public health partners. Originally funded as a network of three sites, PRCs are now located at 37 universities across the country, serving nearly 30 million Americans and 103 partner communities.¹⁸ PRCs work with minority and medically underserved communities to address health issues identified as “winnable battles” by the CDC such as nutrition, physical activity, obesity, teen pregnancy, tobacco use, and HIV/AIDS, as well as cancer, diabetes, asthma, heart disease, elder health, epilepsy, adolescent health, and mental health disorders.¹⁹ At the core of the PRC program is the transdisciplinary application, evaluation, and translation of prevention research to public health practice, grounded in community engagement.^{4, 18, 20} It is one of the few national networks that has developed a collaborative logic model to mobilize the work of the 37 individual centers.²¹

PRCs are engaged in a variety of research activities, including, but not limited to: community-based intervention studies;²² comparative effectiveness research (CER);²³ NIH Clinical and Translational Science Award (CTSA) collaborations;⁴ public-private alliances to improve public health;²⁴ international public health;²⁵ dissemination framework development;²⁶ thematic research and policy collaborations;²⁷⁻²⁹ and systematic evaluation of PRC network activities.³⁰ In Fiscal Year (FY) 2011, the PRC network published 643 journal articles and 20 books/book chapters and conducted 729 scientific presentations.³¹ PRC publications and presentations target multiple audiences, including researchers, public health practitioners, and policymakers.³² In addition to research and dissemination, PRCs are involved in training and mentoring the next generation of public health workers, as well as public health workforce development to further build capacity for science-based approaches to public health.³³ For example, in FY 2011, PRCs collectively trained and mentored almost 1,800 students, ranging from high school students to post-doctorates.³¹ PRCs offered formal public health training programs to over 7,800 individuals, including public health employees, community members, healthcare practitioners, and representatives of community and non-governmental agencies.³¹ The PRC Program also maintains an

online training catalog that is available to the larger public health community (<http://www.cdc.gov/prc/training/practitioners/index.htm>).

Since their inception nearly three decades ago, PRCs have made substantial contributions to public health through the conduct of applied intervention research; dissemination of evidence-based community interventions; creation of public health policy and environmental changes; public health training; community engagement; and provision of direct public health services.^{4, 30, 34-36} However, in recent years, PRCs are being asked to do more work with decreased funding.³⁶ Given federal budget constraints and the escalating challenges to public health, a need exists to expand and improve the research and effectiveness of PRCs through increased resources and innovative and strategic public health partnerships,^{34, 36} including collaboration with Public Health Practice-Based Research Networks (PBRNs) funded by the Robert Wood Johnson Foundation (RWJF).

Public health PBRNs are modeled after medically-oriented PBRNs³⁷ with the premise of engaging state and local public health agencies, community partners, public health professional associations, and academic institutions in the design and implementation of PHSSR-related research, ultimately translating and adopting findings into routine public health decision-making.^{5, 6} Currently, RWJF supports 12 Public Health PBRNs and 16 affiliate sites covering 28 states and more than 1,000 state and local public health agencies; the National Coordinating Center is located at the University of Kentucky.^{38, 39} Methodologically, Public Health PBRNs are engaged in a range of research projects, including comparative case studies, large-scale observational studies, intervention and community trials, and policy evaluation.⁶ Additionally, PBRNs have the capacity to conduct short-term, time-sensitive projects such as local public health response to H1N1 influenza outbreaks. Typically, the breadth of research in Public Health PBRNs is impressive, including projects focused on: variation in agency staffing patterns and communicable disease reporting; impact of regionalized public health services delivery, public health laws and regulations, and funding cuts; quality improvement strategies for chronic disease prevention; and adoption of evidence-based obesity prevention strategies by local coalitions.⁶

The papers appearing in this theme issue of the *American Journal of Preventive Medicine* profile a selection of recent studies carried out by several Public Health PBRNs. These studies examine the impact of practice innovations designed to improve the delivery of evidence-based programs⁴⁰, explore the use of evidence-based decision-making principles among public health administrators^{41, 42}, elucidate the roles of fiscal policies and financing mechanisms in shaping public health practice⁴³, and examine the implementation of the PBRN model itself in facilitating research engagement among public health practice settings.³⁸ Collectively, these studies demonstrate the potential of new studies enhanced via PRC-PBRN linkages. This would allow research teams to design, implement, and translate practice-relevant research in real-world public health settings. But to realize their full potential in moving the public health system toward more effective and efficient practices, PBRNs must connect more powerfully with the nation's prevention research enterprise.

Proposed Linkages

Figure 1 displays a Venn diagram highlighting the intersection of the PRC network, Public Health PBRNs, and PHSSR to inform public health practice. Similar to decision making in public health⁴⁴, the potential synergy of the two national networks and PHSSR research agenda is influenced by context, specifically environmental and organizational characteristics such as funding, political climate, and network leadership and culture. Guided by the new PHSSR research agenda, PRCs can bring skills in applied prevention research on a specific chronic disease (e.g., cancer, obesity, cardiovascular disease) or target population (e.g., elderly, adolescents) to Public Health PBRNs who can then test interventions for effectiveness in real-world public health settings such as local health departments, state health coalitions, or professional health associations. Public Health PBRNs can also bring public health practice questions to PRCs for empirical investigation. Strategic PRC-Public Health PBRN collaborations might be defined by shared geography or topical interests. Ultimately, this partnership could contribute to improved PHSSR research, evidence-based public health practice, and tangible public health outcomes.

Forming alliances between PRCs and Public Health PBRNs is a process that, to some degree, is already underway. Obvious commonalities between the PRC and the PBRN networks exist. Geographically, PRCs and Public Health PBRNs are concurrent in 21 states (Figure 2); several PRCs and Public Health PBRNs also share academic institutions. Moreover, two PRC directors and the PRC Program division director serve on the Public Health PBRN National Advisory Committee. There are also several burgeoning PRC and Public Health PBRN projects focused on policy, environmental, and system-level strategies to improve public health practice which serve as exemplars for additional PRC-PBRN partnerships.

One example of this type of partnership is the collaboration between the PRC in St. Louis (St. Louis University and Washington University), the Missouri Public Health PBRN, and the national PHSSR office to understand and apply EBPH principles in local health departments. This project is grounded in the concept that public health practitioners and policymakers need EBPH information to make decisions on how best to improve public health system performance and improve health outcomes.¹¹ This need is highlighted in the Public Health Accreditation Board Standard that seeks to contribute to and apply the evidence base of public health.⁴⁵ To date, there has been no comprehensive study that has identified the barriers, the scope of evidence-based decision making, and approaches for improving EBPH among local public health practitioners in the U.S. In this ongoing project, the research team is conducting a series of mixed-methods (quantitative and qualitative) studies to accomplish the following four aims: 1) describe the evidence-base for local EBPH in the U.S. (including a review of so-called administrative evidence-based practices)⁴⁶, 2) test the effectiveness of local-level EBPH capacity building in four states, 3) describe a range of local models in EBPH, and 4) translate and disseminate findings to a wide variety of stakeholders. Related to the second aim, a partnership has been established with PRCs, PBRNs, and Public Health Training Centers (located at Case Western Reserve University, University of Michigan, University of North Carolina-Chapel Hill, and University of

Washington) to implement a series of training courses in EBPH to build capacity among local public health practitioners.

A second example of a PRC-PBRN partnership is the Colorado Public Health PBRN and Rocky Mountain PRC (University of Colorado Denver) who are working together on a series of studies examining the implementation and impact of a far-reaching, statewide public health system reform initiative enacted through state legislation in 2008.^{4, 47} The collaborative research team is examining the law's influence on the organization, financing, and delivery of public health services in communities across the state, with a long-term goal of monitoring its impact on population health. As part of this work, the team has investigated the use of regional approaches to public health service delivery among local public health organizations in Colorado as a strategy for improving quality and efficiency. A detailed analysis of the legal mechanisms used to create multi-jurisdictional, regional models of shared service delivery has been undertaken, along with studies that examine changes in governance and decision-making structures, financing mechanisms, community partnerships, and local service delivery patterns.

Finally, the Public Health PBRN NCC and the Rural Cancer Prevention Center (RCPC; University of Kentucky) are co-designing a plan for national dissemination of the RCPC's efficacious "1-2-3 Pap" video intervention, originally designed to promote HPV vaccination adherence and age-appropriate Pap testing among young women in Appalachian Kentucky, but adaptable for other at-risk populations and community settings.²² Beginning with a presentation describing the video intervention to PBRN representatives attending the national 2013 PHSSR conference, this dissemination and implementation effort will provide PBRNs and their affiliated PRCs with the tools and consultative resources needed to adapt and customize the intervention to their respective communities. After interested PBRNs are identified, RCPC investigators and NCC staff will host a one-day training session to launch the dissemination project and orient PBRN representatives to all aspects of the project, from formative research and filming of customized supplementary videos, to the design of studies that address dissemination and relevant PHSSR questions. The NCC Deputy Director will serve as the primary consultative resource for PBRNs adopting the intervention, and the RCPC's communication specialist will travel to PBRN sites that are filming new customized video for their implementation efforts to provide technical assistance. PBRNs will also have access to a web-based implementation toolkit and monthly webinars with NCC and RCPC investigators. Throughout these implementation projects, the RCPC and NCC will document the processes undertaken by PBRNs in adapting the cervical cancer prevention intervention to their service areas through case studies and manuscripts.

These three examples of PRC-Public Health PBRN linkages provide examples of how well-coordinated partnerships between these two national networks can create public health synergy to influence public health practice. Moreover, multiple areas for collaboration that specifically address the new PHSSR agenda have already been identified. Collectively, PRCs and Public Health PBRNs are primed to:

1. facilitate public health workforce training and mentoring in prevention research and EBPH;

2. provide technical assistance to governmental public health agencies and community-based organizations;
3. study the impact of inter-organizational relationships and patterns on public health strategies;
4. assess the effectiveness and implementation of public health strategies in addressing health disparities and social determinants;
5. translate and disseminate research-tested public health interventions; and
6. examine the influence of health information and communication technologies on public health strategies.⁴⁸

To address these agenda items and previous critiques of each network,^{6, 35, 36} PRCs and Public Health PBRNs have an opportunity to conduct large multi-state research projects which not only enhances development of measures and methods, but leads to increases in sample size and empirical evidence, as well as external validity as different settings and contexts are represented in the study. Moreover, PRC-Public Health PBRN collaborations can build on expanded community alliances, thematic research groups, relationships with other national networks such as HRSA-funded Public Health Training Centers, CTSAAs, and academic connections to different disciplines such as medicine, health communication, public policy, business, urban planning, and design. Collaborative research raises awareness of both programs among community partners, public health practitioners, policymakers, the scientific community, and other national organizations.

Importantly, with the current federal budget environment, it would seem reasonable to assume the necessary resources to expand the capacity of both PRCs and PBRNs to address the ever-expanding list of critical PHSSR research questions is not likely to flow from federal public health agencies. This creates even more need for such a partnership where creative funding streams can be pursued. For example, for every \$1 of their core project funding, PRCs have leveraged, on average, \$5.50 from other funding sources such as CDC-funded Special Interest Projects, NIH, and private foundations (RWJF, W.K. Kellogg Foundation, state health foundations).^{31, 36} Similarly, Public Health PBRNs are effective in securing additional funding from CDC, NIH, HRSA, AHRQ, and other private foundations. Both PRCs and Public Health PBRNs have successfully established translational research collaborations with academic health sciences centers funded through the NIH CTSA program, and opportunities for expanded translational research in public health settings continue to grow.⁵⁰ Under the guidance of the PHSSR agenda, linked PRCs and Public Health PBRNs will be able to conduct high-quality CER and cost-effectiveness studies that, in turn, will become invaluable assets to members of Congress and other policymakers who must make decisions that balance allocations for primary prevention versus medical treatment. Given that the PRC-Public Health PBRN collaborations are skillfully orchestrated and adequately funded, favorable cost-effectiveness studies may indeed become the impetus for moving funds from CER and treatment to prevention.

Conclusions

We acknowledge Scutchfield and colleagues' call for renewed PHSSR energy and focus is one that warrants action. Indeed, well-coordinated, synergistic partnerships are instrumental in moving public health forward, despite the ongoing escalation of fiscal and environmental challenges. Thus, we propose to cultivate a strong partnership between two national research networks – one celebrating over 25 years of community-based prevention research, the other quickly establishing itself as a leader in public health services and systems research. This partnership should be focused on improving the interconnectedness of prevention research and public health practice to improve the health of the Nation.

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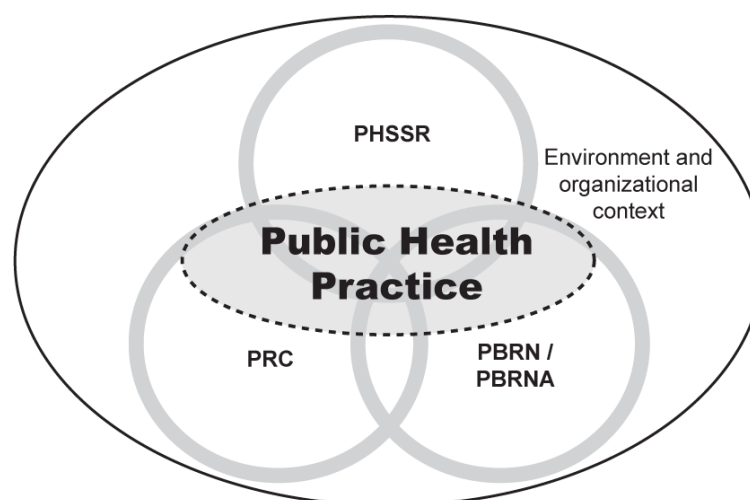


Figure 1.
The intersection of the Prevention Research Centers network, Public Health Practice-Based Research Networks, and PHSSR to inform public health practice.

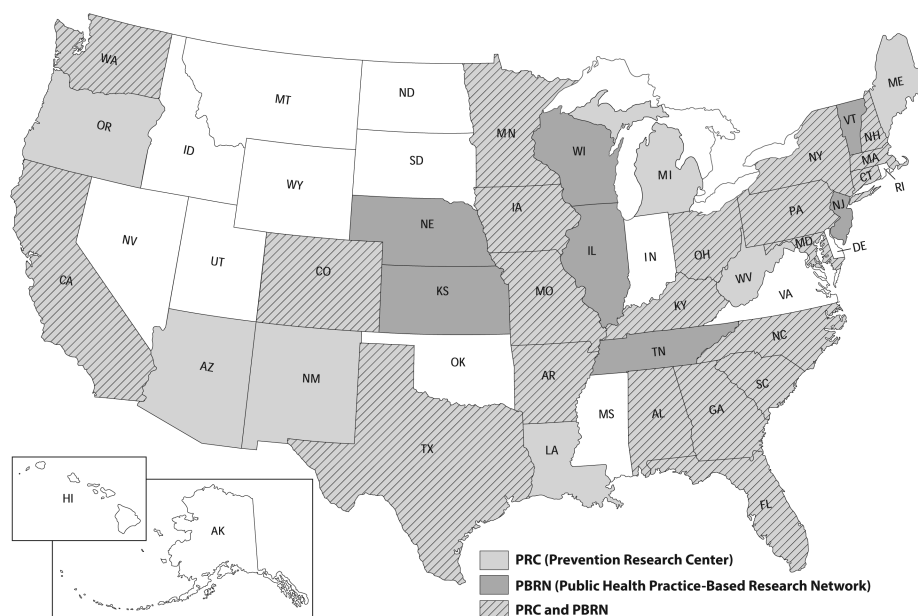


Figure 2.
U.S. map of PRCs and Public Health PBRNs and affiliates.